

**REMARKS**

In the Office Action, the Office indicated that claims 2 to 6 and 11 to 13 are pending in the application and the Office rejected all of the claims.

**The Objections to the Specification and Claims**

On page 3 of the Office Action, the Office objected to the Title and suggested an alternative Title. By this amendment, Applicant has changed the Title. The new title suggested by the Office has been modified slightly since the suggested title was narrower than the broadest claim.

On pages 3 and 4 of the Office Action, the Office objected to several of the claims for various informalities. Applicant has amended claims 2-6 to change "A method" to --The method-- in accordance with the Office's requirement. Claim 5 has been amended as suggested by the Office. Claim 12 has been amended into independent form as suggested by the Office. Claim 13 has been amended in accordance with the Office's suggestion.

In view of the above, the Office is respectfully requested to reconsider and withdraw the objections to the specified claims.

**The §101 Rejection**

On page 4 of the Office Action, the Office rejected claim 13 under 35 U.S.C. §101 as being directed to non-statutory subject matter. Applicant has amended claim 13 as suggested by the Office (see above), and believes this amendment overcomes this rejection. Accordingly, the

Office is respectfully requested to reconsider and withdraw the rejection of claim 13 under 35 U.S.C. §101.

**Rejection under 35 U.S.C. §§102 and 103**

On page 5 of the Office Action, the Office rejected claims 2-4 and 11-13 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,963,982 to Goldman.

On page 7 of the Office Action, the Office rejected claim 5 under 35 U.S.C. §103(a) as being unpatentable over Goldman in view of U.S. Patent Application Publication No. 2004/0148476 to Altare, and on page 8 of the Office Action, the Office rejected claim 6 under 35 U.S.C. §103(a) as being obvious over Goldman in view of U.S. Patent No. 6,453,403 to Czajkowski.

**The Claimed Invention**

The claimed invention uses the running of a thread, arranged to run on a computing device when no other thread is ready to run, as a trigger mechanism to initiate a defragmentation process. In an embodiment, the thread itself contains code to perform the defragmentation process, and in another embodiment, the thread contains code that invokes other code to perform the defragmentation process. In a further embodiment, the thread comprises the thread that first runs during the boot time of the computing device (e.g., the “null thread” or “idle thread”).

**U.S. Patent No. 5,963,982 to Goldman**

U.S. Patent No. 5,963,982 to Goldman ("Goldman") discloses a technique for defragmenting stored data without pointer indirection. Goldman accomplishes this by first creating a table which includes the location of all pointers. The pointers themselves are stored in a separate block of memory from the table. When defragmentation begins, the values of the pointers are updated as needed without changing the actual locations of the pointers. Memory locations associated with variables are accessed at run-time using the pointers themselves, in contrast to a prior art approach referred to as "the handles approach". The Goldman technique eliminates the additional level of indirection in the programming model that is associated with the handles and thereby provides for greater efficiency in the code in which the memory allocation functions are implemented.

The Office's reliance on Goldman is not related to the above-described aspects directed to pointer locations, but instead is related to Goldman's disclosure that the data defragmentation is performed only at idle time "when the computer system is not receiving input".

**U.S. Patent Application Publication No. 2004/0148476 to Altare**

U.S. Patent Application Publication No. 2004/0148476 to Altare ("Altare") discloses defragmentation of a Winchester-type magnetic hard disk drive, automatically conditioned upon assessment of any of (i) the fragmentation status of the disk, (ii) access performance to records upon the disk during use, and/or (iii) exhaustion of available disk recording space, this assessment of the remaining disk recording space being especially relevant where the disk's recording space has been consumed by a novel procedure where newly added files are added to

the disk sequentially from disk beginning to disk end. The Office relies on Altare for its disclosure in paragraphs [0016]-[0017] and [0037], reproduced below verbatim:

[0016] It was found that defragmenting of the Windows master file table (MFT) was useful, the MFT when highly fragmented causing the hard drive to fail find the correct files needed to run the operating system, and crashing the computer. Importantly, the MFT can only be defragged when machines are booted up.

[0017] The selected Defrag 2000 Pro software product defragments the MFT file every time a computer is rebooted. It also can be scheduled to defrag the other files at any time. If the scheduled defrag is missed because a computer is not turned on, the software will know and will run it within 72 hours of the missed date, the system administrator receiving a report that the failure has occurred.

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[0037] Defragmentation usually doesn't conflict with other applications. If the defragger finds a file locked by another application, this file will not be touched. However, newer defraggers write these files to a database and defragment them during the next boot process.

**U.S. Patent No. 6,453,403 to Czajkowski**

U.S. Patent No. 6,453,403 to Czajkowski ("Czajkowski") discloses a system and method for memory allocation in a computing system. The Office relies upon Czajkowski for its disclosure in Column 5, lines 4-10, reproduced verbatim, below:

In various embodiments, the computer system 100 may take various forms, including a personal computer system, desktop computer, laptop computer, palmtop computer, mainframe computer system, workstation, network appliance, network computer, Internet appliance, personal digital assistant (PDA), embedded device, smart phone, television system, or other suitable device.

**The Cited Prior Art Does Not Anticipate the Claimed Invention**

The MPEP and case law provide the following definition of anticipation for the purposes of 35 U.S.C. §102:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) M.P.E.P. §2131.

**The Office Has Not Established a *Prima Facie* Case of Anticipation**

As noted above, the claimed invention explicitly requires "...using a thread of operating system code which is arranged to run on the computing device when no other thread is ready to run to initiate defragmentation of the data..." In other words, the claimed invention uses the running of this specific thread to trigger (initiate) the defragmentation process. This specific thread runs when no other threads are in the queue, and in one embodiment, this thread is the thread that first runs during the boot time of the computing device, sometimes referred to as the "null thread" or the "idle thread".

Applicant acknowledges that Goldman discloses the running of a defragmentation process during times when the computer system has become idle; however, nowhere in Goldman is there any indication of how the idle determination is made, i.e., there is nothing in Goldman that discloses an actual triggering event that identifies the idle state of the computer system having commenced, and there certainly is nothing in Goldman that teaches or suggests that Goldman triggers the defragmentation process using a thread of operating system code which is arranged to run on the computing device when no other thread is ready to run, as is claimed herein.

In fact, Goldman teaches away from the claimed concept. The closest disclosure of a triggering determination in Grossman is in Column 3, lines 10-13, where it is mentioned that

defragmentation is performed "when the computer is not receiving input". This directly contrasts with the claimed invention, where the computer is clearly receiving, as input, the claimed thread.

Since all of the independent claims (and thus all claims) include the above-recited limitation, a limitation neither taught nor suggested by Goldman, it is respectfully submitted that Goldman does not anticipate the claimed invention. Accordingly, the Office is respectfully requested to reconsider and withdraw the rejection of claims 2-4 and 11-13 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,963,982 to Goldman.

**A Prima Facie Case of Obviousness Has Not Been Established**

KSR (*KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007)) requires the Office to provide "some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness." Further, the Office must "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does," In addition, the Office must make "explicit" this rationale of "the apparent reason to combine the known elements in the fashion claimed," including a detailed explanation of "the effects of demands known to the design community or present in the marketplace" and "the background knowledge possessed by a person having ordinary skill in the art."

As is noted above, the claimed invention recites using a thread of operating system code which is arranged to run on the computing device when no other thread is ready to run to initiate defragmentation of the data. The addition of Altare does not remedy this deficiency. As is evident from the quoted sections of Altare, reproduced above, contrary to the assertions

of the Office, Altare does not teach or suggest “a defragmentation thread which is arranged to be a first thread to run at boot time of the computing device.” The cited sections of Altare indicate that a software program, “Defrag 2000 Pro”, defragments the Windows master table file (MFT) every time a computer is rebooted. It mentions nothing about a thread of any kind, let alone a first thread run at boot time, as is claimed herein. A person of ordinary skill in the art reading Altare is left with no way of determining how the defragmentation process is triggered, other than that at sometime during a boot process, Defrag 2000 Pro causes a defragmentation process to occur. Nothing in Altare teaches or suggests the use of a thread to trigger the process, be it a first thread, a last thread, or one in-between the first and last threads.

In view of the above, the proposed Goldman/Altare combination does not render claim 5 obvious. Accordingly, the Office is respectfully requested to reconsider and withdraw the rejection of claim 5 under 35 U.S.C. §103.

Regarding claim 6, the Office relies upon Czajkowski for an alleged teaching of the use of a wireless device in connection with memory allocation. As is noted above, the claimed invention recites using a thread of operating system code which is arranged to run on the computing device when no other thread is ready to run to initiate defragmentation of the data, and neither Goldman nor Altare, taken alone or in combination, teach or suggest this claimed feature. The addition of Czajkowski does not remedy this deficiency, nor does the Office assert that it does. Nothing in Czajkowski teaches or suggests triggering the defragmentation process using a thread of operating system code which is arranged to run on the computing device when no other thread is ready to run, as is claimed in claim 6 through

its dependency on claim 11.

In view of the above, the proposed Goldman/ Czajkowski combination does not render claim 6 obvious. Accordingly, the Office is respectfully requested to reconsider and withdraw the rejection of claim 6 under 35 U.S.C. §103.

**Conclusion**

The present invention is not taught or suggested by the prior art. Accordingly, the Office is respectfully requested to reconsider and withdraw the rejection of the claims. An early Notice of Allowance is earnestly solicited.

The Commissioner is hereby authorized to charge any fees associated with this communication to applicant's Deposit Account No. 50-4364.

Respectfully submitted

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Date

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